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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,304	09/23/2003	Youko Sugio	243015US0	9268
22850	7590	06/17/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			WITHERSPOON, SIKARL A	
			ART UNIT	PAPER NUMBER
			1621	

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/667,304

Applicant(s)

SUGIO ET AL.

Examiner

Sikarl A. Witherspoon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/23/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over of Pearson et al (US 4,009,151) and further in view of Walters (US 5,288,915).

Applicants claim a process for the production of 2,7-dibromo-fluorenone by oxidizing 2,7-dibromo-fluorene with molecular oxygen in the presence of a phase transfer catalyst in a heterogeneous, mixed solvent of an aqueous solution of a caustic alkali and a water-immiscible solvent. Further limitations include purifying crude crystals of the fluorenone by recrystallization to recover 2,7-dibromo-fluorenone at a purity of at least 99 wt. %, and the catalyst being a quaternary ammonium salt.

Pearson et al teach a process wherein a fluorene, i.e., 2-vinyl-fluorene, is oxidized with oxygen, in the presence of benzyltrimethyl ammonium hydroxide as catalyst, in a suitable solvent, i.e., pyridine, to produce the corresponding ketone, i.e., 2-vinyl-fluorenone (col. 2, lines 12-62). The 2-vinyl-fluorenone is purified by recrystallization (example II at col. 3, line 60 to col. 4, line 5).

The differences between Pearson et al and the present invention are that Pearson teaches the use of a different starting material, and hence, teaches the production of a different ketone; Pearson et al do not teach the solvent further

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comprising a caustic alkali, and finally, Pearson et al do not expressly teach 99% purity of the ketone formed.

With regard to the first difference, the examiner takes the position that while the instant process is drawn to the production of a different ketone than is taught by Pearson et al, the instant process still would have been suggested to a person of ordinary skill in the art. The examiner's position is predicated on the fact that the substituents on the fluorene compound used as starting material in the present process, i.e., the bromine atoms at the 2- and 7- position, as well as the vinyl group at the 2-position on the fluorene compound used as starting material in the process of Pearson et al., are spectator molecules. In other words, such substituents do not have any active role in the oxidation reaction. Accordingly, it would have been reasonable for a person of ordinary skill in the art to expect that in conducting the oxidation process taught by Pearson et al, the corresponding fluorenone compound would be produced by oxidation of a fluorene compound regardless of its substitution, and as such, the instant process is rendered obvious.

With regard to the last two differences, as stated above, Pearson et al do not teach the solvent further comprising a caustic alkali, and Pearson et al do not expressly teach 99% purity of the ketone formed. However, Walters teaches a similar process wherein a fluorene compound is reacted in a solution of carbon tetrachloride and sodium hydroxide, in the presence of tetrabutylammonium hydroxide, as catalyst, to produce the corresponding fluorenone at 100% purity (col. 7, lines 14-53).

It therefore would have been obvious to a person of ordinary skill in the art, at the time the present invention was made, to modify Pearson et al to include a solvent solution that comprises water immiscible solvent *and* a caustic alkali, such as sodium hydroxide, as suggested and taught by Walters. One of ordinary skill would have been motivated to make such a modification in the teaching of Pearson et al., since Walters, who teaches a process for making fluorenone compounds from the corresponding fluorene compound, has shown success in using such a heterogeneous, mixed solvent solution in preparing fluorenone compounds, i.e., a fluorenone of 100% purity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikarl A. Witherspoon whose telephone number is 571-272-0649. The examiner can normally be reached on M-F 8:30-6:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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